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Notice of Allowability

Application No.

10/565,012

Applicant(s)

KITAKA ET AL.

Examiner

Quyen P. Leung

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/3/2007.
2. ☒ The allowed claim(s) is/are 1-29 and 45-51.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) *QPL*
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 20061120, 20061010
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20070523.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Quyen Leung/
Quyen Leung
Primary Patent Examiner
Group Art Unit 2874

EXAMINER'S AMENDMENT

In response to applicant's amendment filed 5/3/2007, claim 50 has been amended.

In response to applicant's election filed 5/3/2007, claims 1-58 are pending with claims 30-44 and 52-58 having been withdrawn without traverse.

The information disclosure statements filed 10/10/2006 and 11/20/2006 have been considered. See the attached initialed copies.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

- This application is in condition for allowance except for the presence of claims 30-44 and 52-58 directed to a homogeneous medium waveguide non-elected without traverse. Accordingly, claims 30-44 and 52-58 have been cancelled.
- In claim 48 line 1 "(Withdrawn)" has been amended to --(Previously presented)--. See Interview Summary for explanation of change.

The following is an examiner's statement of reasons for allowance:

Re claims 1-20, 45-51, the cited prior art fail to teach or fairly suggest a photonic crystal waveguide comprising: a core formed of a photonic crystal having periodicity having a first direction and propagating an electromagnetic wave in a second direction perpendicular to the first direction, the core comprising a photonic band structure having a Brillouin zone boundary and a photonic band thereon comprising a propagation mode in which the electromagnetic wave is propagated a homogeneous medium cladding having a refractive index n_s ; and **the core further comprising a side face parallel to the first direction, the side face in contact with the homogeneous medium cladding, the side face satisfying the condition:**

$$\lambda_0/n_s > a\lambda/(\lambda^2/4 + a^2)^{0.5}$$

where λ_0 denotes a wavelength of the electromagnetic wave in a vacuum, a denotes a period of the photonic crystal, and λ denotes a period of the wave propagated through the core in the second direction perpendicular to the first direction.

Re claims 21-29, the cited prior art fail to teach or fairly suggest a photonic crystal waveguide comprising: a core formed of a photonic crystal having periodicity in a first direction and propagating an electromagnetic wave in a second direction perpendicular to the first direction, the core comprising a photonic band structure having a Brillouin zone center line and a high-order photonic band thereon comprising a propagation mode in which the electromagnetic wave is propagated a homogeneous medium cladding having a refractive index n_s , and **the core comprising a side face parallel to**

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the first direction in contact with the homogeneous medium cladding the side face satisfying the condition:

$$\lambda_0/n_s - \lambda > 0$$

where λ_0 denotes a wavelength of the electromagnetic wave in vacuum, a denotes a period of the photonic crystal, and λ denotes a period of the wave propagated through the core in the second direction perpendicular to the first direction.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (571) 272-8188. The examiner can normally be reached on normally M-F, 6:15 am - 2:45 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/

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Primary Patent Examiner
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qpl